
V-LIFE technology supporting operators for over a decade
10+ YEARS
BE V. SMART
BE V-LIFE READY
INTELLIGENCE INSTALLED
V-LIFE®
A VIPER INNOVATION

Easy to install, trusted technology supporting 40+ global operators, spanning 6 continents

V-LIFE

V-LIFE is the only preventative and active 'healing' solution for low insulation resistance caused by water ingress.

As assets age, cables degrade, and failures happen. Low insulation resistance caused by water ingress is inevitable, compromising production and safety.

The most common cause of subsea electrical failures is the ingress of water into the cable insulation, which decreases the insulation resistance (IR) and may produce short circuits or leakage to earth. These faults often lead to loss of power and/or communications to subsea equipment and have the potential to halt production from subsea wells.

It has been demonstrated that prolonged operation of subsea power circuits with particularly low IR can lead to the loss of copper from the conductor at the fault site which in turn can lead to the complete loss of operability of the system. Before **V-LIFE** became available expensive subsea fault-finding interventions and the replacement of cables, equipment and umbilicals were the only solutions to this problem.

The **V-LIFE** effect is achieved by the application of a low voltage passivation signal to the faulty line which through an electro-kinetic and electrochemical process generates and sustains a solid precipitate at, and only at, the location or locations in the subsea circuit where seawater has ingressed. The precipitate produced is electrically insulating and its propagation at the source of the fault results in an increase in the IR of the circuit often by more than 100x.

A **V-LIFE** application involves the installation of a **V-LIM** line insulation monitor (the hardware) and the enabling of its **V-LIFE** passivation signal by the upload of a software config file. **V-LIM** and **V-LIFE** can typically be installed and commissioned within 2 to 3 shifts offshore. The installation work is all topside. No subsea intervention is required. The only solution other than costly subsea repair or total umbilical replacement.

Key benefits:

- Increases IR without subsea intervention
- Recovers multiple IR failures throughout the system
- Extends the life of failing umbilicals and electrical distribution equipment
- 'Buys time' whilst a new umbilical is procured
- Used as an alternative to installing new, costly and long-lead time umbilicals
- Used to delay early field abandonment
- **V-LIFE** 'finds' the points of water ingress, no diagnostics required
- Environmentally friendly alternative to CO_2 heavy umbilical replacement methods

V-LIFE - Supporting businesses with the critical supply of gas.

www.viperinnovations.com/v-life

The leading alternative to subsea interventions

Key features

- Compatible with comms on power systems
- Provides all the features of a Line Insulation Monitor including IR measurements and configurable alarms/trips
- Compatible with power and/or signal lines
- A range of installation options to suit all field applications
- Displays IR measurements graphically in real time
- Compatible with single or three phase systems
- Graphical touch screen LCD
- Advanced control and configuration via USB and Ethernet interfaces
- Typically recovers IR from kΩ to MΩ within a few days

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Be V-LIFE Ready

Monitor • Recover • Prevent • Protect

In subsea energy operations, unplanned downtime is costly and disruptive. Cable faults, such as water ingress or declining insulation resistance (IR), jeopardise reliability, safety, and profitability. Why wait for failures when they can be prevented?

Viper Innovations' technology provides operators with the tools to identify and address issues proactively, restoring cable health before failures occur. By combining precise real-time monitoring with active cable 'healing,' **V-LIFE** safeguards production, reduces maintenance costs, and extends cable lifespans.

Through an integrated suite of solutions — **V-LIM**, **V-LIM2**, and **V-SLIM** — Viper Innovations offers comprehensive system health management.

Together, these solutions ensure systems are **V-LIFE** ready, with **PlatformVi** providing system health insights, tracking trends, and acting quickly; enabling operators to prevent faults and actively maintain cable integrity.

Installing Viper's solutions delivers:

- Holistic risk-based view of the electrical system's health.
- Early warning of operational risk.
- Automated insulation resistance recovery.
- Fault prevention to minimise unplanned downtime.
- Extended asset life through active restoration and protection.
- Cost efficiency by avoiding emergency subsea repairs.

V-LIM
Advanced IR monitoring for topside systems, delivering real-time visibility, early fault detection, and exceptional accuracy.

V-LIM2
The latest generation, designed to support analysis and automation. Enhanced monitoring capabilities and an intuitive interface for streamlined decision-making.

A bespoke subsea asset management tool providing system health insights, tracking trends, quick decision-making and enabling automated IR recovery; allowing operators to prevent faults and actively maintain system integrity.

Subsea insulation resistance monitoring and healing downstream of transformers, ensuring complete infrastructure oversight.

Two variants are available;

V-SLIM Eurocard PCBA
Designed for installation in OEM subsea distribution and control hardware.

V-SLIM Canister
A cable integrity monitoring harness, intended for integration in subsea distribution systems.

Recover the electrical integrity of subsea circuits with V-LIFE, a preventative and protective 'healing' solution for low insulation resistance caused by water ingress. Safeguards production, reduces maintenance costs and extends cable lifespans.

Case study

Keeping the lights on in East Java

V-LIFE was used to keep the lights on in East Java by recovering a failed gas field electrical system with an 18-month replacement umbilical lead time.

Terang, Sirasun & Batur (TSB) gas fields

The Terang, Batur, and East & West Sirasun (TSB) gas reservoirs are located approximately 100km north of Bali in water depths ranging from 90 to 230m. Collectively, the reserves amount to 1 Trillion Cubic Feet (TCF) of recoverable gas (mostly methane), which is equivalent to 170 million barrels of oil.

The produced natural gas flows through the East Java Gas Pipeline. At 370km in length, the pipeline runs past the Kangean Islands, through the Madura Strait, and onshore to Surabaya (Indonesia's second-largest city). The gas from the field contributes to the stable natural gas supply to consumers in East Java.

Some of the biggest clients for the gas are fertiliser factories in the outlying area of Surabaya. As well as the steady supply of energy to these clients, gas production from the field is critical to the region's economic growth. The criticality of the gas supply from the TSB fields is immense for the province and the country as a whole. The vast majority of the gas produced is used as fuel by the region's gas-fired power stations and indirectly accounts for 50% of the region's power generation.

The Subsea Control System was designed to be 'fail as is' on the loss of electrical power; this meant that all subsea actuators, and therefore valves, remained in the same state as when power and communications were lost. On the upside, this meant that gas production continued, but if there were to be a loss of hydraulic power or an Emergency Shutdown, then gas production would stop, and the field could not be restarted. Lights would go out in East Java!

Having gone out for a quote for a replacement, a lead time of 18 months meant that KEI were in an untenable position in terms of the surety of gas production. **Viper** was initially contacted by KEI, as they had lost control and monitoring of the Terang subsea wells due to low Insulation Resistance (IR) and a subsequent power trip at the Electrical Power Unit.

Following a quick assessment by Viper, both parties moved to get a contract in place. Terms and Conditions were agreed, and the interface engineering was completed all within six weeks of the initial contact. The hardware was dispatched from stock from the UK to Indonesia, and a **Viper** engineer was mobilised to arrive at the same time as the hardware. Within two shifts offshore, the **V-LIM** was installed in the EPU rack, and **V-LIFE** was enabled on the second shift.

The IR failure reacted quickly to the application of **V-LIFE**, and KEI had full control and monitoring capability returned after two hours of **V-LIFE** commencing. The Insulation Resistance increased from 170kΩ to 63MΩ within 4 hours and then reached 1GΩ within a day. Further **V-LIM** and **V-LIFE** installations recovered each failed channel.

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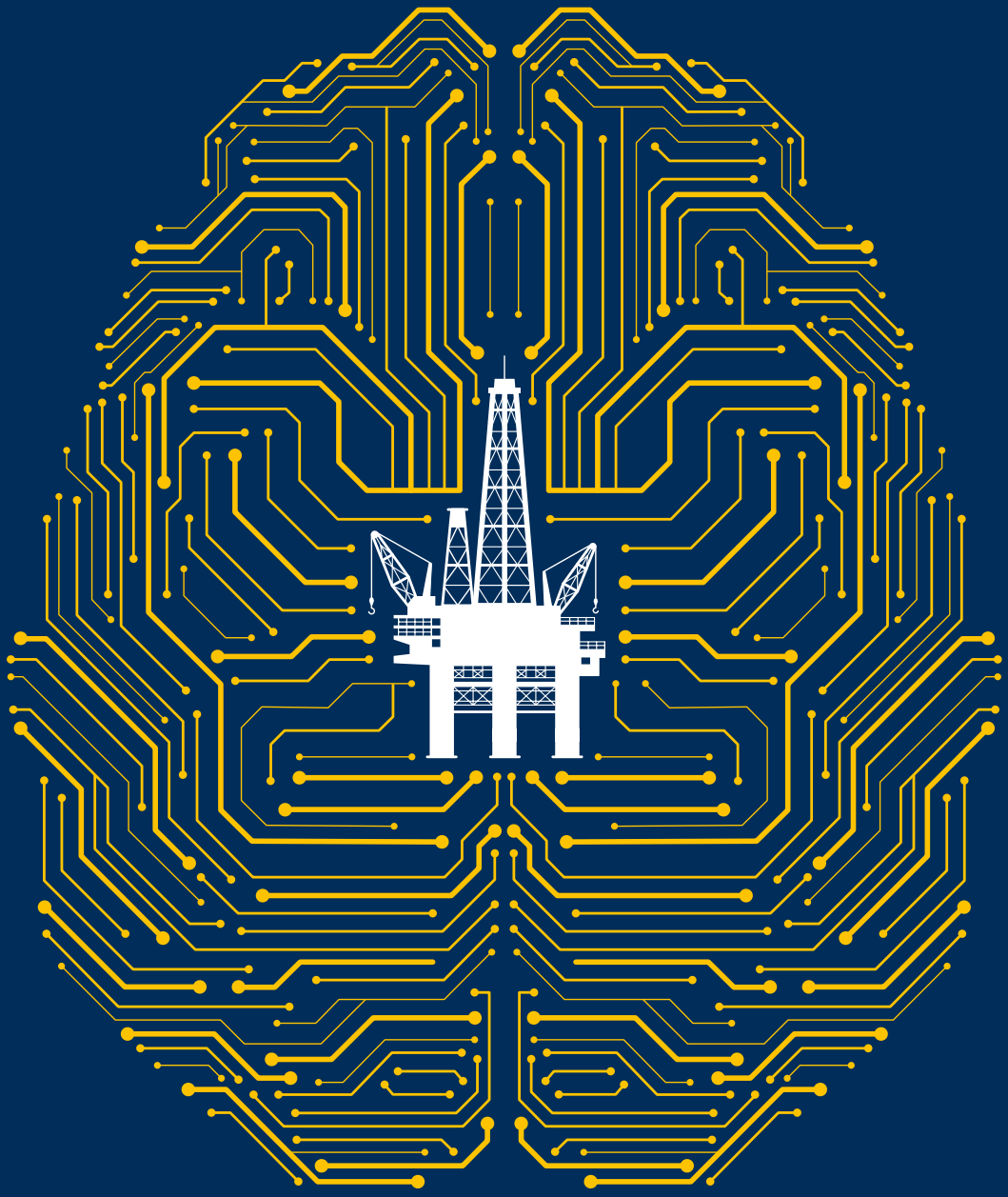

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Get in touch with one of our experts today and learn what **V-LIFE** could do for you.

For more information visit:
www.viperinnovations.com/v-life

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